US Army Corps of Engineers ®
Norfolk District

Norfolk Harbor and Channels, VA
Craney Island Eastward Expansion
Feasibility Study

Benefits Analysis

14Dec04

Types of Economic Benefits

- National Economic Benefits
  - Hampton Roads is a major feature of the Nation's transportation system
  - Improvements to the Nation's production and/or efficiency
  - Transportation cost savings
- Regional Economic Benefits
  - Jobs, Wages, Business revenues

Economic Benefits Assessed in this Analysis

- Direct Economic Benefits of Craney Island Eastward Expansion
- National Economic Development Benefits
- Transportation Cost Savings
  - Reductions in distances that goods travel
  - Reductions in the cost of conducting the nation's commerce

General Setting For the Analysis

- Huge growth in containerized trade at Hampton Roads and at most other ports
- Strong growth is projected for the future
- Many ports will not have the capacity to handle future volume of containerized trade
- Craney Island would be operational in 2016

Analytical Team

- Moffatt & Nichol – DMA collaboration
- Moffatt & Nichol
  - Origin and Destination analysis
  - Landside transportation costs
  - Port capacities
- DMA
  - Benefit method development
  - Transportation cost modeling
  - Benefit calculations
  - Commodity forecast via Global Insight
- USACE Oversight

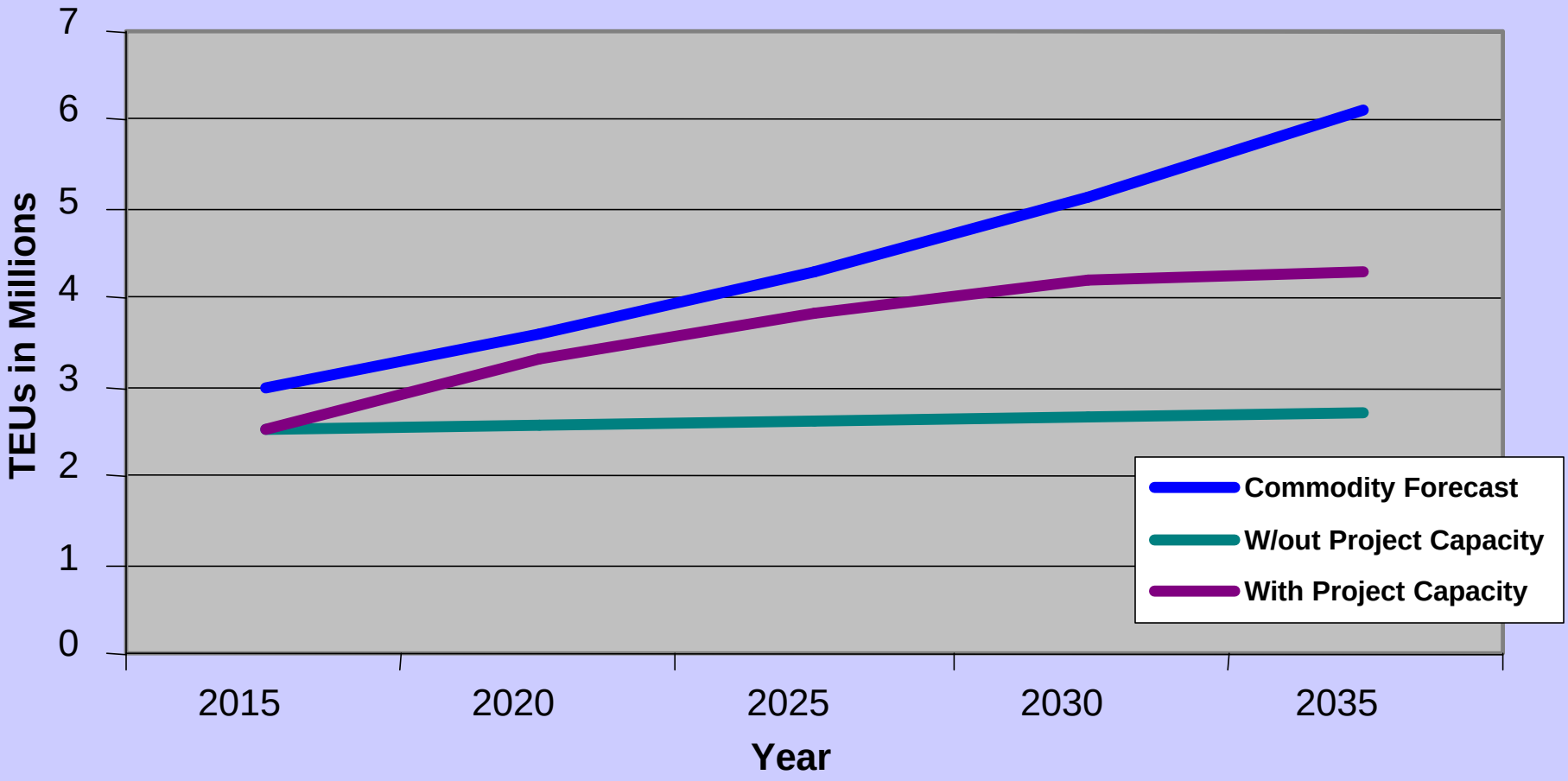
Quality Control Process

- Moffatt & Nichol – DMA In-Process Review
  - Six model development meetings
- Norfolk District Benefit Method Review
  - Norfolk, August 2004
- North Atlantic Division Benefit Method Review
  - New York, October 2004
- North Atlantic Division Report and Spreadsheet Review
  - November 2004
- USACE Headquarters Report Review
  - December 2004

Model Overview

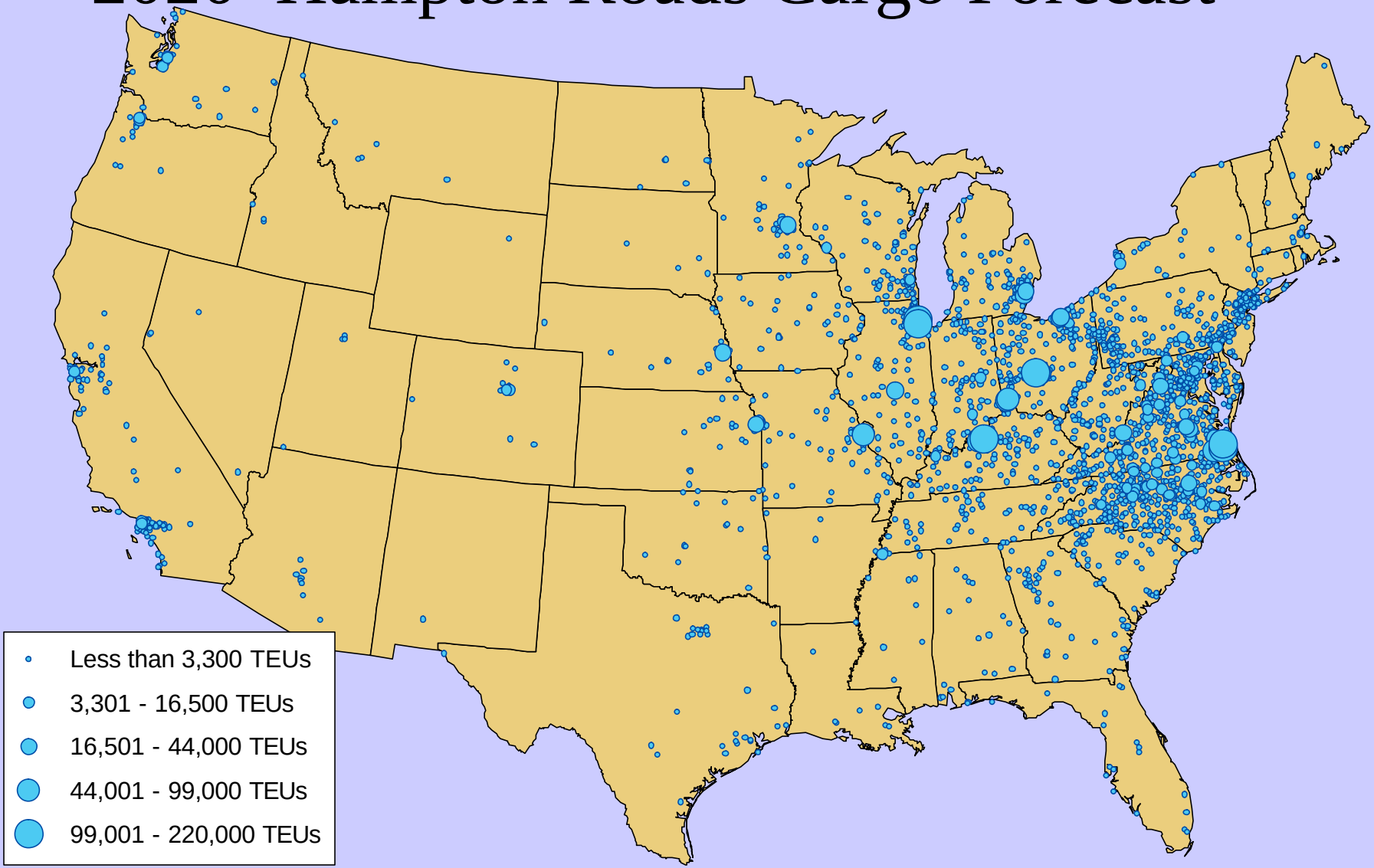
- Without Craney Island Expansion
  - Insufficient port capacity
  - Some cargo diverted to other ports
  - Higher transportation costs because goods have to travel farther
- With Craney Island Expansion
  - Additional port capacity
  - Smaller volume of diverted cargo
  - Lower landside transportation costs because goods use shorter route through Hampton Roads

Commodity and Capacity Forecasts

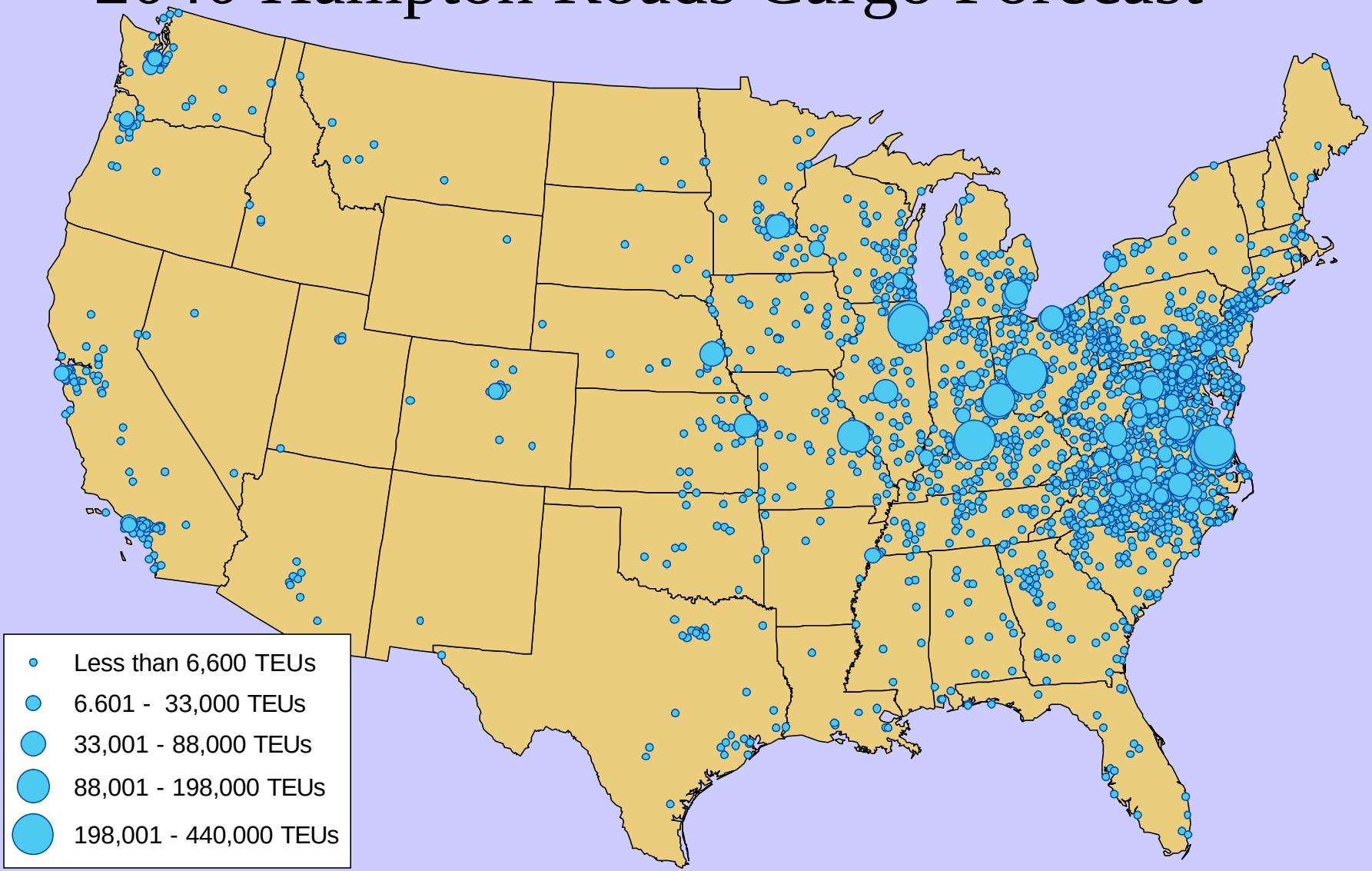


2003 Hampton Roads Cargo Origins and Destinations

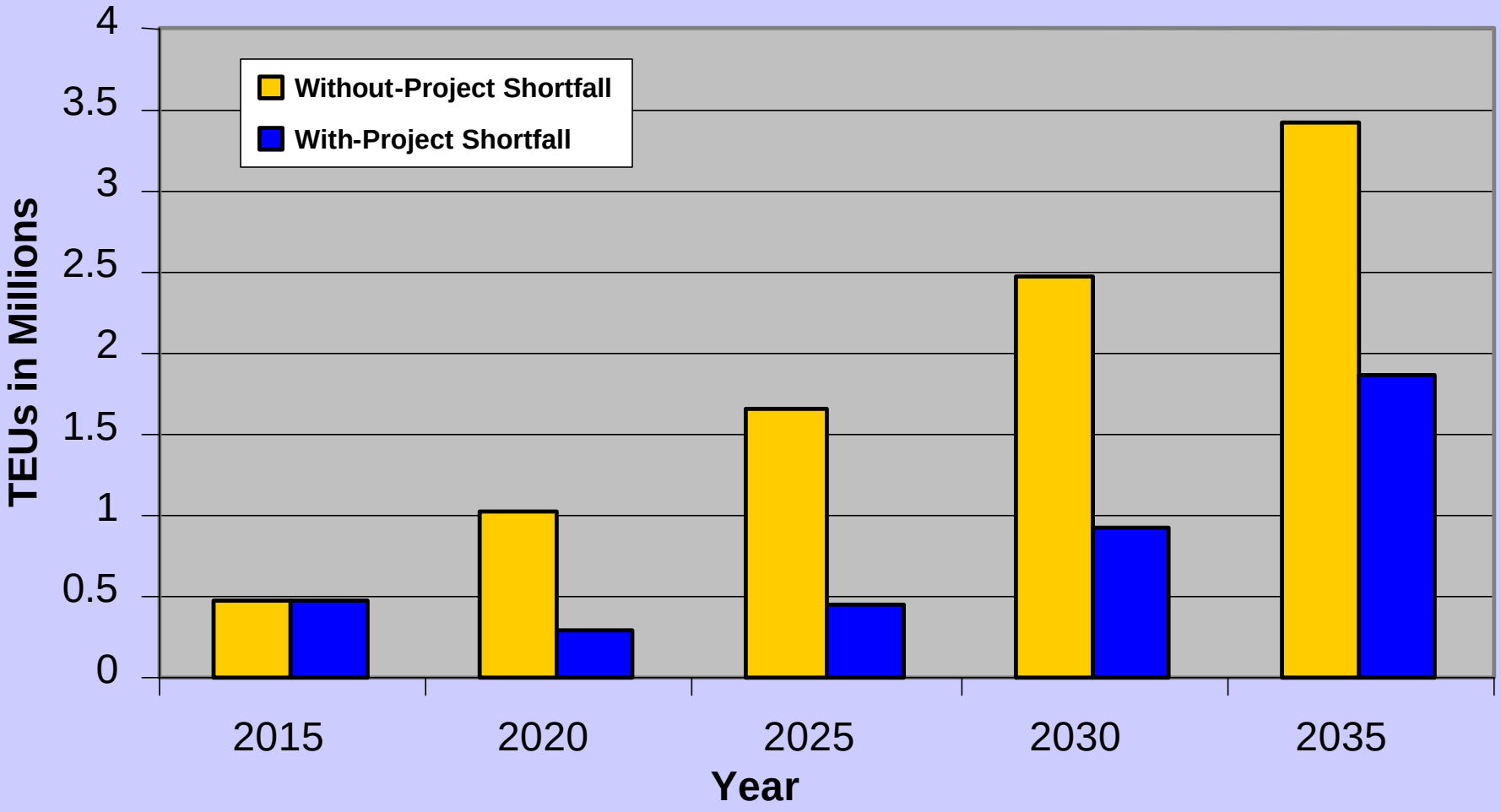
2020 Hampton Roads Cargo Forecast



2040 Hampton Roads Cargo Forecast



Capacity Shortfalls



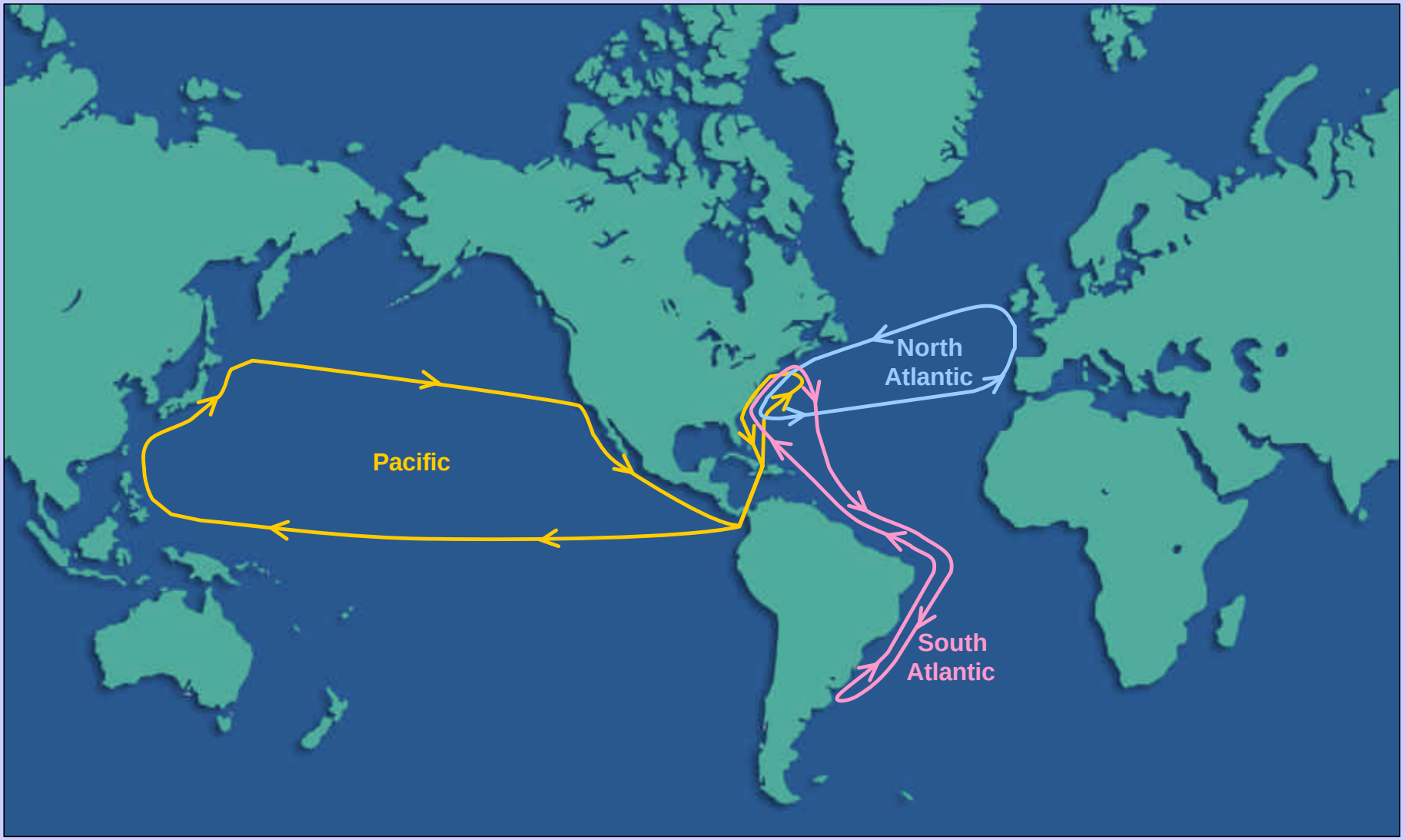
What Happens to the Excess Cargo?

- Which cargo will be diverted?
  - Model used very detailed analysis of actual 2002 origin and destinations
- How will it get from origin to destination?
  - Alternative port analysis
  - Shipping line, rail line, and truck haul analysis
- What are the transportation costs of diverting cargo?
  - Port fees, inclusive rail costs, trucking costs

Trade Route Analysis

- Three major trade routes
  - North Atlantic
    - Europe, Mediterranean, Suez traffic
  - South Atlantic
    - South America, Central America, Caribbean
  - Pacific
    - China, Japan, Korea

Three Major Trade Routes

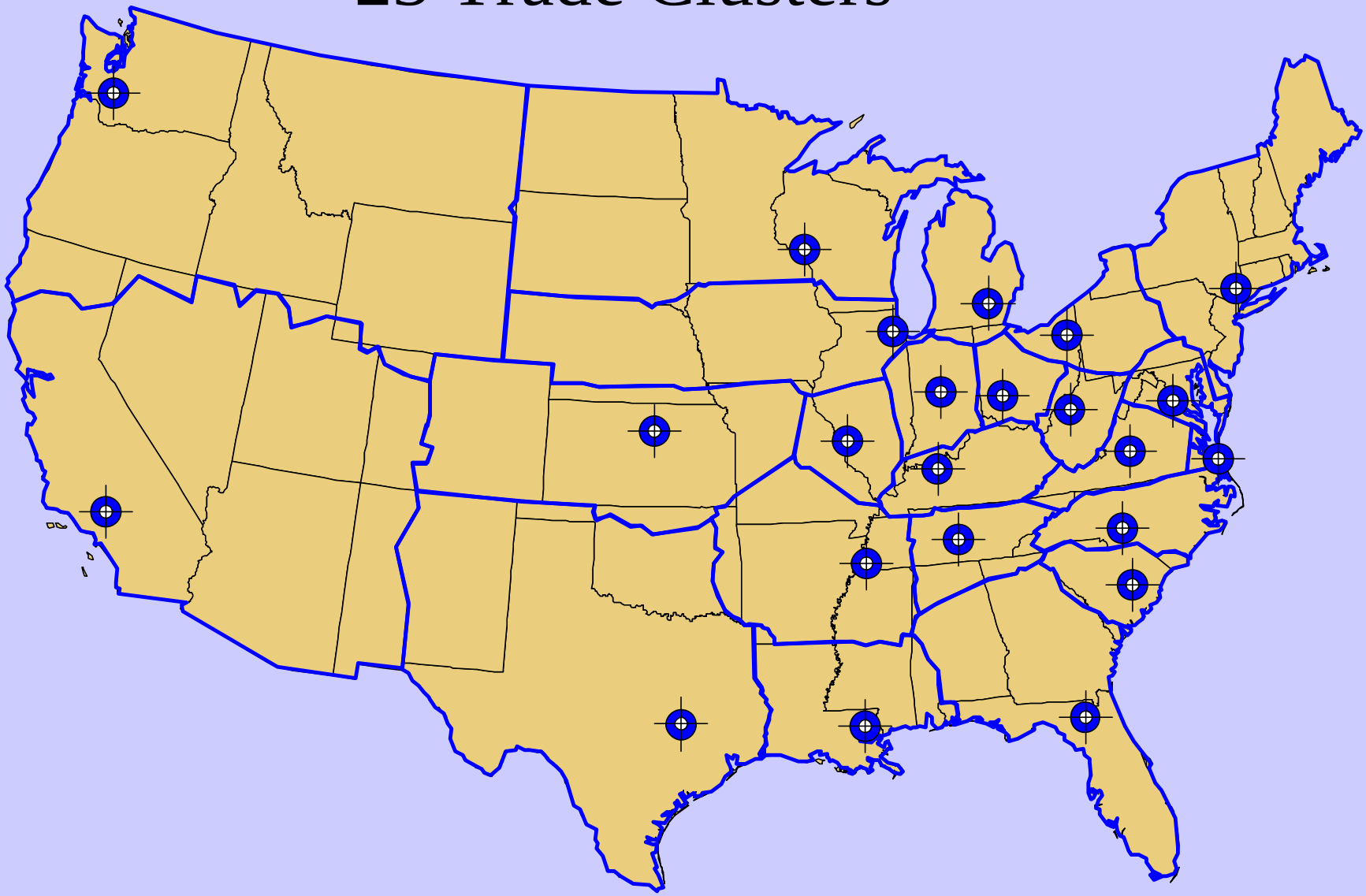


Origin – Destination Analysis

- 23 Trade Clusters
  - Groups of US origins and destinations
  - Based on origin-destination zip code
  - Defined by volume of trade and physical boundaries

2003 Hampton Roads Cargo Origins and Destinations

23 Trade Clusters



Alternative Port Analysis

- 18 ports evaluated as potential alternative ports
- Selection Criteria
  - Available future capacity
  - Port characteristics (channel depth, niche port)
  - Current liner services
- Three alternative ports used in base-line analysis
  - LA/LB
  - Savannah
  - Miami

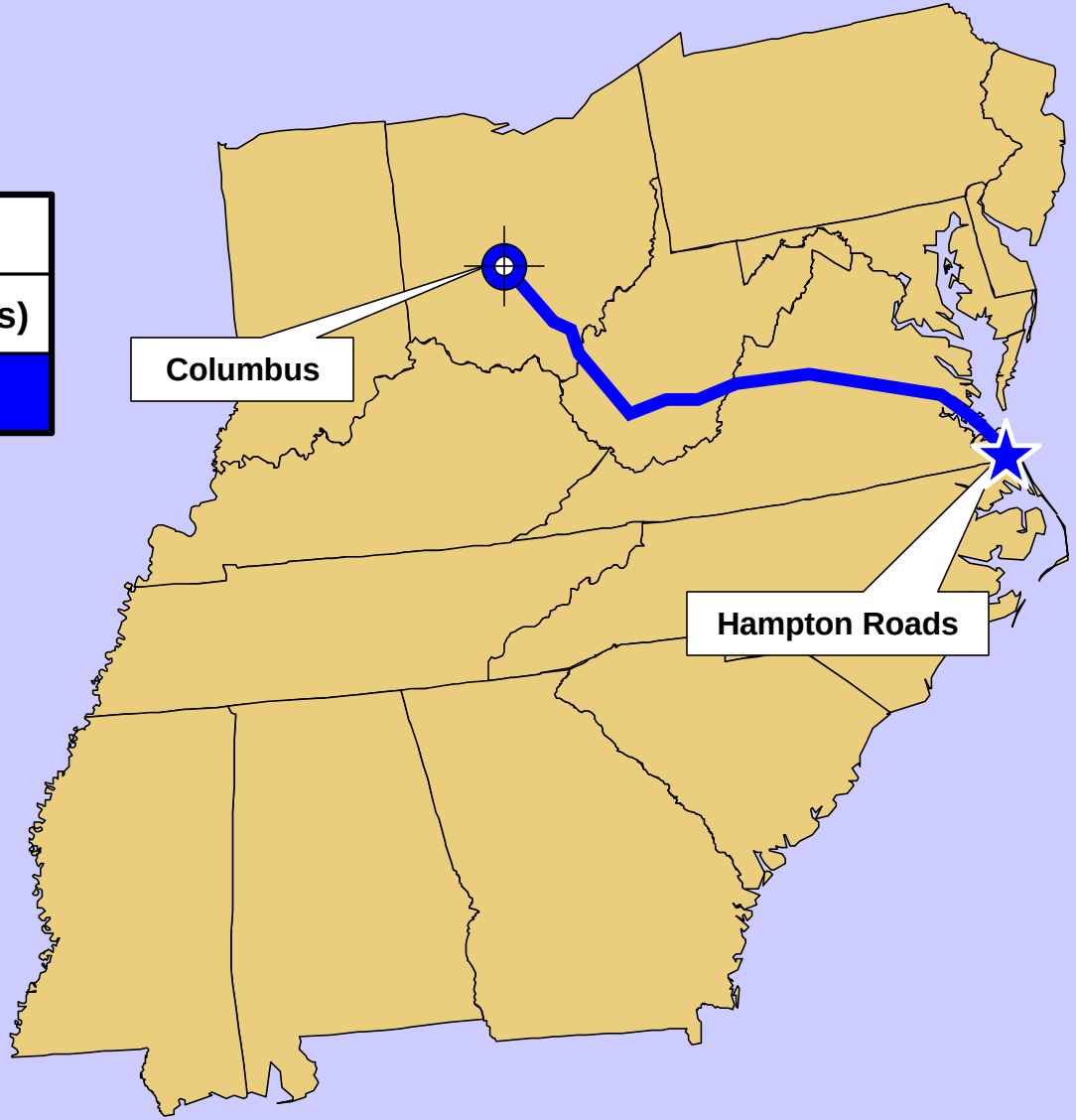
Alternate Ports Considered

Landside Transportation Analysis

- Truck and Rail Systems
  - Norfolk and Alternative Ports
  - 23 Trade Clusters
- Truck vs. Rail Allocations
  - Estimated for each Port-Trade Cluster combination
    - Availability
    - Cost
    - Cargo characteristics

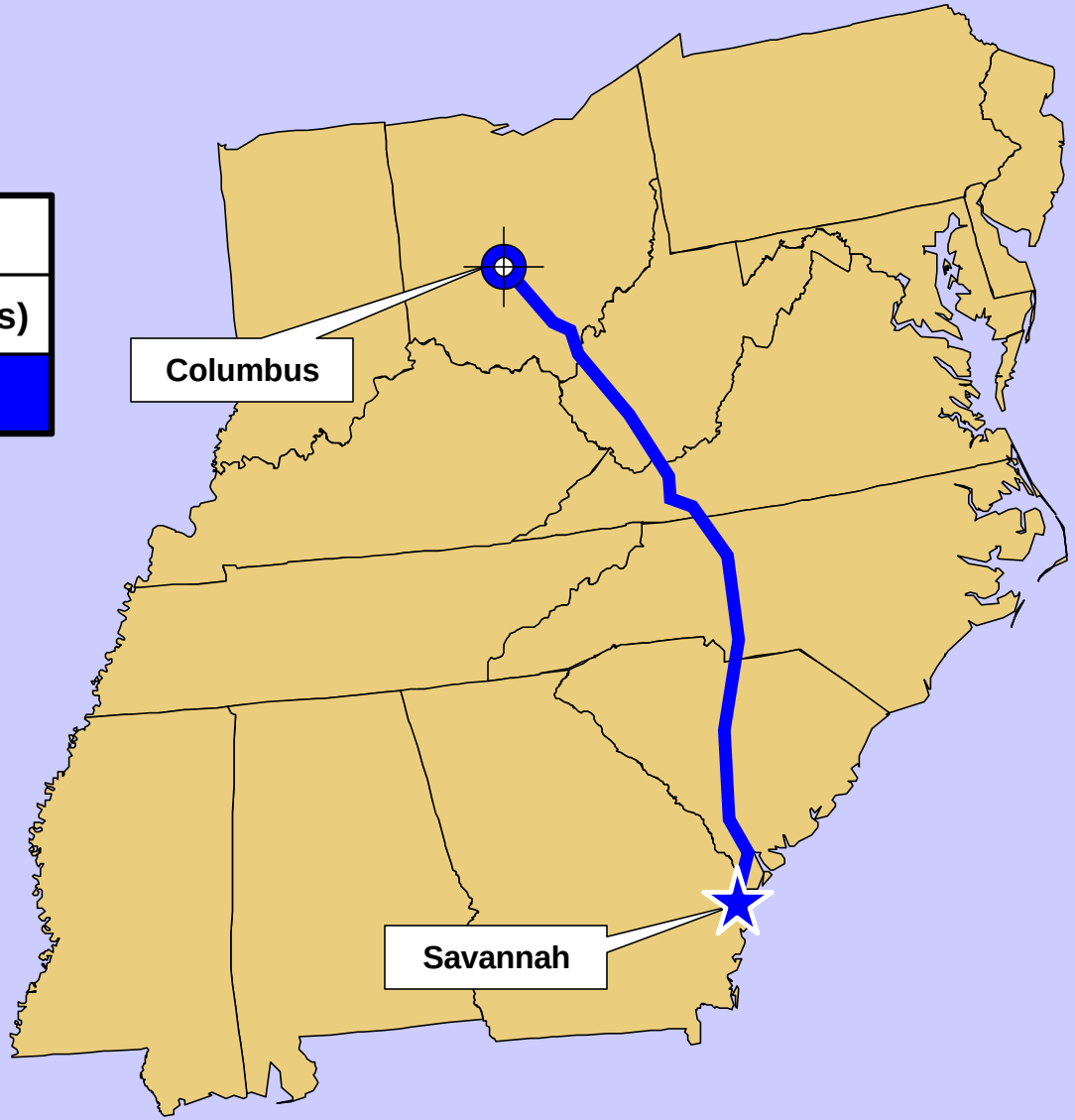
Hampton Roads to Columbus Via Truck

Port Cost	**$ 248**
Truck Cost	**$ 1,384 (578 Miles)**
Total Cost	**$ 1,632**



Savannah to Columbus Via Truck

Port Cost	**$ 166**
Truck Cost	**$ 1,721 (680 Miles)**
Total Cost	**$ 1,887**



Additional Transportation Costs Without Craney Island

- Average Increase in Transportation Costs per TEU
  - North Atlantic Route using Savannah: $131
    - 18% cost increase
  - Pacific Route using LA/LB: $239
    - 68% cost increase
  - South Atlantic Route using Miami: $1,167
    - 146% cost increase

Total National Economic Benefits

- Total Transportation Cost Savings
  - Sum of Present Values: $5.95 billion over 50 years
  - Federal Discount Rate: 5.375%
- Average Annual Equivalent
  - $345 million/year